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S. de Jong [a,b], S.B. Renard [b], R.J.M. van Donkersgoed [b,c], M. van der Gaag [d,e], L. Wunderink [c], G.H.M. Pijnenborg [b,a], P.H. Lysaker [f,g,*]

[a] GGZ Noord-Drenthe, Assen, The Netherlands
[b] Rijksuniversiteit Groningen, Groningen, The Netherlands
[c] GGZ Friesland, Leeuwarden, The Netherlands
[d] Parnassia Psychiatric Institute, Den Haag, The Netherlands
[e] VU University, Dept of Clinical Psychology, EMGO Institute of Health and Care Research, The Netherlands
[f] Roudebush VA Medical Center, Indianapolis, USA
[g] Indiana University School of Medicine, Indianapolis, USA

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ABSTRACT

Enhancing work function is now widely considered a core element of comprehensive schizophrenia treatment. While research efforts have illuminated factors that influence how well patients perform at work, less is known about the factors influencing the subjective experience of work. It is not known how, and to what extent, symptoms, cognitive deficits or metacognitive capacities impact job satisfaction and whether treatment can have an effect on job satisfaction. To explore this issue, data from a trial in which participants in a six-month vocational program were assigned to either a standard support group or a cognitive behavioral group therapy, and asked to fill in weekly self-reports of job satisfaction was analyzed. Work satisfaction and the consistency of these ratings were compared between the two groups and the moderating influence of metacognitive capacity was analyzed. A significant interaction effect revealed that higher metacognitive capacity predicted higher average job satisfaction only in the CBT group. Additionally, higher metacognitive capacity led to a more varied appraisal of work satisfaction only in the support group.

1. Introduction

In stark contrast to older views of schizophrenia as a disease characterized by progressive deterioration, medicine is now seeking to embrace the view that many with schizophrenia can recover substantially if not fully over time (Liberman and Kopelowicz, 2005). Furthermore, recovery is defined as composed of multiple components including symptom remission, a return to acceptable levels of psychosocial function as well changes in individual's subjective experiences of themselves as beings in the world (Silverstein and Bellack, 2008; Buck et al., 2013). As a result many comprehensive treatments interested in recovery from schizophrenia focus on obtained psychosocial outcomes including enhanced work function (e.g. McGurk et al., 2009; NICE, 2009). It is widely held that returning to work may in turn lead to other beneficial effects including improvements in quality of life (Bryson et al., 2002), cognitive functioning (Bio and Gattaz, 2011), and reductions in symptoms (Bell et al., 1996; Bond et al., 2001).

While work performance has been often studied (e.g. Lysaker et al., 2005a; Yanos et al., 2010; Horan et al., 2012), another element of work function, work satisfaction remains largely unexplored. It is not known how, and to what extent, symptoms, cognitive deficits or metacognitive capacities impact job satisfaction and whether treatment can have an effect on job satisfaction. It has long been noted that job satisfaction should be included in investigations of work rehabilitation (Twamley et al., 2003; Bond et al., 2012). The motivation to work is more than obtaining income and mastering work tasks. This is, for example, seen in people without psychosis leaving their jobs when they are no longer a source of satisfaction (Shields and Ward, 2001). Indeed, studies of work discontinuation suggest that people often quit their jobs when the experience of working takes on a generally negative or unsatisfying quality (Federici and Skaalvik, 2012; Bouckenooghe et al., 2013). This issue seems especially important in schizophrenia as persons with this condition may struggle to find meaning in commonplace activities, given deficits in intrinsic motivation (Saperstein et al., 2011; Vohs et al., 2013) which are strongly related to psychosocial functioning (Nakagami et al., 2010).

To explore the concept of work satisfaction in persons diagnosed with schizophrenia, data were used from a study examining the benefits

* Corresponding author at: Roudebush VA Medical Center, 1481 west 10th St. 319-988-2546.
E-mail address: Plysaker@iupui.edu (P.H. Lysaker).

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of a CBT intervention aimed to stimulate job performance (Lysaker et al., 2009). During this study, participants were enrolled in a six-month psychosocial intervention that offered paid work placements and randomly assigned to either a standard support group or a specialized form of cognitive behavioral therapy (CBT). During the trial they filled out weekly self-report of job satisfaction.

Metacognition refers to a spectrum of activities which involve thinking about one's thinking about oneself and others (Semerari et al., 2003; Lysaker and Dimaggio, 2014) involving the integration of information into complex representations of self and others. It has been conceptualized as a capacity which allows for persons to make personalized meaning of life events and ultimately to use that knowledge to respond to psychological and social challenges (Gumley, 2011). The capacity for metacognition has been found relatively impaired in persons with schizophrenia (Lysaker et al., 2005b) and has been linked to a range of functional indices of recovery (Lysaker et al., 2011) including intrinsic motivation (Tas et al., 2012). Metacognition might affect job satisfaction when the ability to form complex representations of self and others prevents isolated negative or positive experiences at work from drastically alerting one's appraisal of the overall quality of one's experience of work. For instance, with limited metacognition, single events could one's sense of satisfaction from week to week. The current study examined whether treatment condition and metacognition might exert an additional influence on the experience of job satisfaction.

Our first hypothesis concerned differences in work satisfaction between the two treatment conditions. We anticipated that receiving CBT would be related to generally higher and more consistent ratings of job satisfaction than in the support condition, as CBT is expected to help persons reframe negative experiences in a positive light, preventing episodic experiences of low work satisfaction due to isolated events. Our second hypothesis was that higher levels of baseline metacognition would be related to higher and more consistent levels of job satisfaction. Finally, we examined whether there was an interaction between these variables. We anticipated that the effect of the intervention on job satisfaction and the consistency in job satisfaction would be moderated by metacognition. Since CBT requires persons to form ideas about their own thinking, we specifically expect that having higher levels of metacognition would leave persons in a better position to benefit from CBT.

2. Methods

2.1. Participants

One hundred participants with a SCID (Spitzer et al., 1994) confirmed diagnosis of either schizophrenia or schizoaffective disorder were recruited from the outpatient service of a Veterans Affairs (VA) medical center and a community mental health center. All patients were receiving medication management, and were in a post-acute phase of illness (having had no changes in psychotropic medication, housing or hospitalizations in the month prior to the study). Exclusion criteria were the presence of a comorbid neurological disorder or mental retardation. To ensure that only meaningful data entered the analysis, persons who attended fewer than four weekly group sessions were excluded from the analysis. This resulted in 78 participants. For demographic variables see Table 1.

2.2. Materials

The *Metacognition Assessment Scale* (MAS-A) is an instrument adapted for use with patients with psychotic disorders by Lysaker et al. It consists of four hierarchical scales: Self-reflectivity, Understanding the Other's Mind, Decentration (the ability to detach from one's own viewpoint) and Mastery (the ability to define psychological problems and find adaptive ways of coping). It has consistently demonstrated good psychometric properties (Lysaker et al., 2010; Davis et al., 2011; Lysaker et al., 2011). The MAS-A was used to score transcripts obtained via the Indianapolis Psychiatric Illness Interview (IPII).

Table 1
Demographics.

Proportion schizophrenia–schizoaffective disorder	Sz: 52–Sa: 26
Mean age	45.96 (sd = 8.93)
Mean years of education	12.73 (sd = 2.3)
Mean age of first hospitalization	28.12 (sd = 10.6)
Proportion male–female	M: 67–F: 11
Proportion Caucasian–African American	C: 32–AA: 45

The *Indianapolis Psychiatric Illness Interview* is a semi-structured interview intended to elicit a spontaneous speech sample. It consists of five sections that span a free narrative of one's life, an illness narrative, perceived changes due to mental illness, the degree to which the participant feels the illness controls their life and to which they control the illness, and what the participant sees for himself in the future. Interviews typically last 30–60 min.

The *Weekly Self-Evaluation Form* is a seven item self-report questionnaire answered on a Likert scale ranging from 1 through 5, with an optional score of "6" indicating that the participant did not work that week. The first question of this form ("How much did you enjoy your job this week") was analyzed. In this study, we examined the average job satisfaction and the consistency in job satisfaction over the study period. The consistency in job satisfaction was computed as the average difference between two consecutive weeks.

The *Positive and Negative Syndrome Scale* (PANSS; Kay et al., 1987) is intended to measure positive, negative and cognitive symptoms. The PANSS is a 30 item rating scale based on chart review and a semi-structured interview. In this study only the positive and negative subscales are used.

2.3. Procedure

Following written informed consent, participants were randomized to receive either the IVIP CBT intervention or support services. There were no statistically significant differences between the groups regarding age, gender, education, diagnosis, lifetime hospitalization, or treatment site. Comparisons on measures such as symptoms and assessment of change (Change Assessment Scale; McConnaughy, 1983) are presented elsewhere (Lysaker et al., 2009), but were not statistically significant.

All participants were enrolled into a 26-week job placement program. The positions offered were entry-level medical center positions, supervised by regular job site supervisors. Participants received compensation ($3.50) per hour, up to a maximum of 20 h per week. Mimicking real-world situations, participants could be terminated for failure to follow work rules, or substandard performance. These job placements all consisted of working regular hours at VA Medical Center work sites. Based on the participant's interests and skills, they were offered tasks such as assisting patients in wheelchairs in the hospital, janitorial, laundry or administrative work such as filing paperwork and answering phones.

The IVIP intervention follows common themes of CBT in that it attempts to help patients recognize basic cognitive processes and identify and challenge dysfunctional beliefs, with an emphasis on work-related beliefs ("I am useless and could never hold a job"). This intervention is delivered via weekly group and individual sessions. It consists of four modules, each of which spans two weeks. The manual to the IVIP intervention is available from the authors, and described in detail elsewhere (Davis and Lysaker, 2005).

Support services were considered a control condition in the original study, and modeled on services as generally provided by VA Medical Centers. They included a weekly group session of 1 h, during which participants were urged to support and help one another. Therapists

Table 2
Means and standard deviations of the independent and dependent variables.

	Support-group mean (sd)	CBT-group mean (sd)
Positive symptoms	15.19 (4.28)	15.88 (4.76)
Negative symptoms	19.64 (4.90)	19.38 (5.35)
Metacognition	11.43 (4.05)	11.60 (4.15)
Average job satisfaction	4.05 (0.69)	3.95 (0.69)
Consistency in job satisfaction	−0.46 (0.32)	−0.50 (0.38)

offered empathic statements and advice, but explicitly did not teach CBT principles. To ensure intensity of treatment was similar between IVIP and support service conditions, participants were offered weekly individual meetings. The support service condition featured no pre-set curriculum, lacked specific work feedback and relied solely on material brought up by participants themselves. At the start of their weekly sessions, participants were asked to fill in the *Weekly Self-Evaluation Form*.

2.4. Analysis

The data were analyzed with IBM SPSS Statistics, version 20. After descriptive analysis, two separate regression analyses were performed. The first regression analysis aimed to examine whether metacognition, treatment and the interaction between metacognition and treatment could predict the average job satisfaction over and above positive symptoms, negative symptoms and demographic variables. The second regression analysis examined whether metacognition, treatment and their interaction significantly predicted the consistency in job satisfaction over and above symptoms and demographic variables. Significant interactions were explored in additional analyses.

3. Results

Table 2 shows the means and standard deviations of the independent and dependent variables divided by treatment group. There were no significant differences between the two groups ($p > 0.05$) on the baseline measures. There were also no significant differences in the average job satisfaction and the consistency in job satisfaction over the study period.

The first regression analysis examined whether metacognition, treatment and the interaction between metacognition and treatment predicted the average job satisfaction over and above positive symptoms, negative symptoms and demographic variables. There were no significant main effects of treatment ($t = -0.59$, $p = .588$), metacognition ($t = 1.40$, $p = .165$), or any of the control variables. There was, however, a significant interaction effect between treatment and metacognition ($t = 2.21$, $p = .03$). This interaction indicates that the main effects of treatment and metacognition should not be interpreted in isolation as metacognition might have the expected moderator effect on treatment.

To explore the interaction effect, further regression analyses were performed to examine the relationship between metacognition and job satisfaction in the two groups. As shown in Fig. 1 metacognition did not predict job satisfaction in the support group ($t = -0.96$, $p = .344$). However, in the CBT group it did significantly predict job satisfaction ($t = 2.62$, $p = .013$). In this group metacognition predicted 15% of the variance in job satisfaction as shown by an $R^2 = 0.15$.

The second regression analysis examined whether metacognition, treatment, and the interaction between treatment and metacognition significantly predicted the consistency in job satisfaction over and above positive symptoms, negative symptoms and demographic variables. There were no a significant main effects of treatment ($t = -0.22$, $p = .827$) or metacognition ($t = -0.71$, $p = .482$). Except for sex ($t = -2.88$, $p = .005$, *men* > *women*), none of the control variables had a significant effect. The interaction effect between metacognition and treatment was significant ($t = 2.56$, $p = .013$) which suggests metacognition might moderate the effect of treatment.

Separate regression analyses were performed to examine the interaction effect between treatment and metacognition on the consistency in job satisfaction. In addition, sex was entered as a control variable because of its significant effect on the consistency in job satisfaction. In the support group, the consistency in job satisfaction was significantly predicted by metacognition ($t = -2.90$, $p = .006$) but not by sex. Higher metacognition scores predicted less consistency (see Fig. 2). Examining R^2's showed that in the support group metacognition predicted 20% of the variance in the consistency in job satisfaction. In the CBT group the consistency in job satisfaction was not significantly predicted by metacognition ($t = 1.05$, $p = .299$).

4. Discussion

This study evaluated whether adjunctive treatment with CBT and metacognitive capacity influence the average work satisfaction and consistency in work satisfaction of patients enrolled in a vocational rehabilitation program. Regarding average work satisfaction, there was no main effect of treatment, or metacognitive capacity. However,

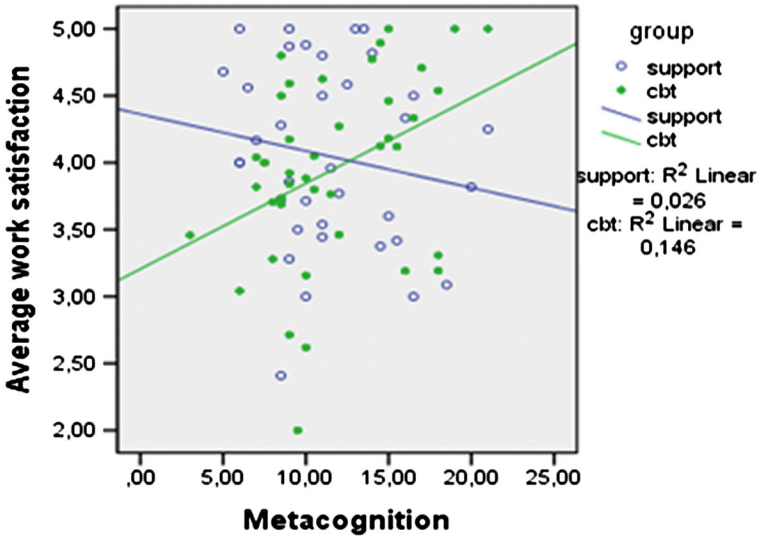

Fig. 1. The interaction of group * metacognition for average work satisfaction.

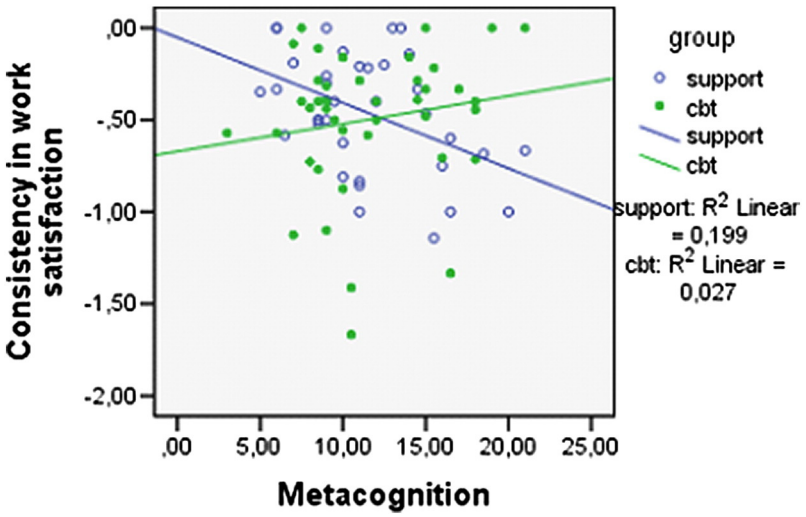

Fig. 2. The interaction of group * metacognition for consistency in work satisfaction.

a significant interaction was found between metacognitive capacity and treatment, where in the CBT group, but not in the support group, higher metacognitive capacity predicted higher average job satisfaction.

This may suggest that within the confines of CBT, greater abilities to form complex ideas about oneself and others allow for the construction of ideas about the meaning of work which may underlie work satisfaction. It is also consistent with our hypothesis that CBT allows persons to interpret negative experiences in novel ways such that single negative events do not taint larger judgments about experiences as perhaps happened in the support group. This finding is clinically relevant, as it has been shown that metacognitive capacity can be targeted with psychotherapy (Lysaker et al., 2005c; Bateman et al., 2009), some of which are currently under study in randomized controlled trials (Jakobsen et al., 2012; Van Donkersgoed et al., 2014). The ability to understand oneself and meaningfully interact with one's environment has previously been noted as an indicator of 'rehabilitation readiness' (Cohen et al., 1997). Future clinical interventions may take the form of a program where patients are first assisted to raise metacognitive capacity before enrollment in a work placement program and adjunctive CBT program. Aside from other benefits patients receive from these interventions, the addition of a metacognition-oriented psychotherapy may significantly reduce drop-out in work placement programs.

We also examined whether treatment and metacognitive capacity would be related to more consistency in job satisfaction. While we found no main effect of treatment or metacognition, there was again a significant interaction effect. Surprisingly, higher metacognitive capacity led to more varied appraisal of work satisfaction in the non-CBT group.

We cautiously hypothesize that participants with lesser metacognitive capacity may be unable to form a nuanced sense of their experience at work and so maintain a vague and global appraisal of work experience. In contrast, those with higher metacognitive capacity may experience work in a more nuanced way, having some weeks which are more satisfying than others, the capacity to discriminate between various types of (dis)satisfaction perhaps sufficiently aided by verbalizing them in non-directive group therapy. These hypotheses, however, certainly go beyond our data and should be considered at best as fodder for future work, as a baseline for consistency in work satisfaction is yet to be established. For those who *do* receive CBT, metacognitive capacity no longer significantly predicted the consistency of work satisfaction. These results are congruent with the hypothesis that in CBT treatment (and potentially also other psychotherapies), the therapist assists patients to formulate and answer questions regarding their own cognitions, and to help the patient to reframe the appraisal of events and experience less negative emotions. Without external prompting, a patient may not think beyond "I had a lousy day at work." Exploration of thoughts, a common element of CBT, may have taken the form of questions such as: "But what exactly was so awful?" and "You say coworker X does not like you. What makes you think so? Last week you said you two got along so well?" which challenge clients to consider their experience in a deeper sense.

The limitations of this study pose interesting questions for future research. One question pertains to the measurement of work experience. In our study we used a single item intended to measure job satisfaction. Such a single measurement point may lack nuance and fail to capture different things which go into whether persons feel satisfied with their work experience doubtlessly spans multiple components. Future research efforts are needed, for instance, which include questions pertaining feelings of productivity and self-efficacy to better understand which factors play a role in subjective work experience. An instrument developed for and validated with our population may find application in the assessment of various work placement programs and adjunctive interventions, to determine to what extent clients report their experiences as positive. Elements contributing to positive experiences could be integrated into such programs.

Our findings demonstrate that persons with higher versus lower metacognitive capacity benefit in different ways from CBT treatment. Given the popularity of CBT, future research should seek to determine the exact influence metacognitive capacity has on outcome of CBT treatment in all its facets. It seems altogether possible that those currently found not to benefit from CBT simply lack the metacognitive capacity. In such cases, metacognitively oriented psychotherapy (Lysaker and Dimaggio, 2014) may be a useful avenue, prior to (re)attempting CBT.

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Contributors

De Jong, Renard, van Donkersgoed, Pijnenborg and Lysaker, were involved in literature searches. De Jong and Renard undertook the statistical analyses. De Jong, Renard, van Donkersgoed and Lysaker wrote the complete first draft and van der Gaag, Wunderink and Pijnenborg subsequently made meaningful contributions to the writing. All authors contributed to and have approved the final manuscript.

Conflict of interest

There are no conflicts of interest or disclosures.

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References

Bateman, A., Fonagy, P., Allen, J.G., 2009. Theory and practice of mentalization-based therapy. Textbook of Psychotherapeutic Treatments. American Psychiatric Publishing, Arlington, VA, USA, pp. 757–780.

Bell, M.D., Lysaker, P.H., Milstein, R.M., 1996. Clinical benefits of paid work activity in schizophrenia. Schizophr. Bull. 22 (1), 51–67 (Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9165640).

Bio, D.S., Gattaz, W.F., 2011. Vocational rehabilitation improves cognition and negative symptoms in schizophrenia. Schizophr. Res. 126 (1–3), 265–269. http://dx.doi.org/10.1016/j.schres.2010.08.003.

Bond, G.R., Resnick, S.G., Drake, R.E., Xie, H., McHugo, G.J., Bebout, R.R., 2001. Does competitive employment improve nonvocational outcomes for people with severe mental illness? J. Consult. Clin. Psychol. 69 (3), 489–501. http://dx.doi.org/10.1037//0022-006X.69.3.489.

Bond, G.R., Campbell, K., Drake, R.E., 2012. Standardizing measures in four domains of employment outcomes for individual placement and support. Psychiatr. Serv. 63 (8), 751–757. http://dx.doi.org/10.1176/appi.ps.201100270.

Bouckenooghe, D., Raja, U., Butt, A.N., 2013. Combined effects of positive and negative affectivity and job satisfaction on job performance and turnover intentions. J. Psychol. 147 (2), 105–123. http://dx.doi.org/10.1080/00223980.2012.678411.

Bryson, G.J., Lysaker, P.H., Bell, M.D., 2002. Quality of life benefits of paid work activity in schizophrenia. Schizophr. Bull. 28 (2), 249–257 (Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12693431).

Buck, K.D., Roe, D., Yanos, P.T., Buck, B., Fogley, R.L., Grant, M., Lysaker, P.H., 2013. Challenges to assisting with the recovery of personal identity and wellness for persons with serious mental illness: considerations for mental health professionals. Psychosis 5 (2), 134–143. http://dx.doi.org/10.1080/17522439.2012.699544.

Cohen, M.R., Anthony, W.A., Farkas, M.D., 1997. Assessing and developing readiness for psychiatric rehabilitation. Psychiatr. Serv. 48 (5), 644–646 (Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9144818).

Davis, L.W., Lysaker, P.H., 2005. Cognitive behavioral therapy and functional and metacognitive outcomes in schizophrenia: a single case study. Cogn. Behav. Pract. 468–478 (Retrieved from http://www.sciencedirect.com/science/article/pii/S1077722905800744).

Davis, L.W., Eicher, A.C., Lysaker, P.H., 2011. Metacognition as a predictor of therapeutic alliance over 26 weeks of psychotherapy in schizophrenia. Schizophr. Res. 129 (1), 85–90. http://dx.doi.org/10.1016/j.schres.2011.02.026.

Federici, R.A., Skaalvik, E.M., 2012. Principal self-efficacy: relations with burnout, job satisfaction and motivation to quit. Soc. Psychol. Educ. 15 (3), 295–320. http://dx.doi.org/10.1007/s11218-012-9183-5.

Gumley, A., 2011. Metacognition, affect regulation and symptom expression: a transdiagnostic perspective. Psychiatry Res. 190 (1), 72–78. http://dx.doi.org/10.1016/j.psychres.2011.09.025.

Horan, W.P., Green, M.F., DeGroot, M., Fiske, A., Hellemann, G., Kee, K., Nuechterlein, K.H., 2012. Social cognition in schizophrenia, part 2: 12-month stability and prediction of functional outcome in first-episode patients. Schizophr. Bull. 38 (4), 865–872. http://dx.doi.org/10.1093/schbul/sbr001.

Jakobsen, J.C., Gluud, C., Kongerslev, M., Larsen, K.A., Sørensen, P., Winkel, P., Simonsen, E., 2012. "Third wave" cognitive therapy versus mentalization-based therapy for major depressive disorder. A protocol for a randomised clinical trial. BMC Psychiatry 12, 232. http://dx.doi.org/10.1186/1471-244X-12-232.

Kay, S.R., Fiszbein, A., Opler, L.A., 1987. The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophr. Bull. 13 (2), 261–276. http://dx.doi.org/10.1093/schbul/13.2.261.

Liberman, R.P., Kopelowicz, A., 2005. Recovery from schizophrenia: a concept in search of research. Psychiatr. Serv. 56 (6), 735–742. http://dx.doi.org/10.1176/appi.ps.56.6.735.

Lysaker, P.H., Dimaggio, G., 2014. Metacognitive capacities for reflection in schizophrenia: implications for Developing Treatments. Schizophr. Bull. 40 (3), 487–491. http://dx.doi.org/10.1093/schbul/sbu038.

Lysaker, P.H., Bryson, G.J., Davis, L.W., Bell, M.D., 2005a. Relationship of impaired processing speed and flexibility of abstract thought to improvements in work performance over time in schizophrenia. Schizophr. Res. 75 (2–3), 211–218. http://dx.doi.org/10.1016/j.schres.2004.09.014.

Lysaker, P.H., Carcione, A., Dimaggio, G., Johannesen, J.K., Nicolò, G., Procacci, M., Semerari, A., 2005b. Metacognition amidst narratives of self and illness in schizophrenia: associations with neurocognition, symptoms, insight and quality of life. Acta Psychiatr. Scand. 112 (1), 64–71. http://dx.doi.org/10.1111/j.1600-0447.2005.00514.x.

Lysaker, P.H., Davis, L.W., Eckert, G.J., Strasburger, A., Hunter, N., Buck, K.D., 2005c. Changes in narrative structure and content in schizophrenia in long term individual psychotherapy: a single case study. Clin. Psychol. Psychother. 12, 406–416.

Lysaker, P.H., Davis, L.W., Bryson, G.J., Bell, M.D., 2009. Effects of cognitive behavioral therapy on work outcomes in vocational rehabilitation for participants with schizophrenia spectrum disorders. Schizophr. Res. 107 (2–3), 186–191. http://dx.doi.org/10.1016/j.schres.2008.10.018.

Lysaker, P.H., Dimaggio, G., Daroyanni, P., Buck, K.D., LaRocco, V.A., Carcione, A., Nicolò, G., 2010. Assessing metacognition in schizophrenia with the Metacognition Assessment Scale: associations with the Social Cognition and Object Relations Scale. Psychol. Psychother. 83 (Pt 3), 303–315. http://dx.doi.org/10.1348/147608309X481117.

Lysaker, P.H., Erickson, M., Ringer, J., Buck, K.D., Semerari, A., Carcione, A., Dimaggio, G., 2011. Metacognition in schizophrenia: the relationship of mastery to coping, insight, self-esteem, social anxiety, and various facets of neurocognition. Br. J. Clin. Psychol. 50 (4), 412–424. http://dx.doi.org/10.1111/j.2044-8260.2010.02003.x.

McConnaughy, E., 1983. Stages of change in psychotherapy: measurement and sample profiles. Psychother. Theory Res. Pract. Train. 20, 368–375 (Retrieved from http://psycnet.apa.org/journals/pst/20/3/368/).

McGurk, S.R., Mueser, K.T., DeRosa, T.J., Wolfe, R., 2009. Work, recovery, and comorbidity in schizophrenia: a randomized controlled trial of cognitive remediation. Schizophr. Bull. 35 (2), 319–335. http://dx.doi.org/10.1093/schbul/sbn182.

Nakagami, E., Hoe, M., Brekke, J.S., 2010. The prospective relationships among intrinsic motivation, neurocognition, and psychosocial functioning in schizophrenia. Schizophr. Bull. 36 (5), 935–948. http://dx.doi.org/10.1093/schbul/sbq043.

NICE, 2009. Schizophrenia: Core Interventions in the Treatment and Management of Schizophrenia in Adults in Primary and Secondary Care. NICE Clinical Guideline ((March). Retrieved from http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Core+interventions+in+the+treatment+and+management+of+schizophrenia+in+adults+in+primary+and+secondary+care#0).

Saperstein, A.M., Fiszdon, J.M., Bell, M.D., 2011. Intrinsic motivation as a predictor of work outcome after vocational rehabilitation in schizophrenia. J. Nerv. Ment. Dis. 199 (9), 672–677. http://dx.doi.org/10.1097/NMD.0b013e318229d0eb.

Semerari, A., Carcione, A., Dimaggio, G., Falcone, M., Nicolò, G., Procacci, M., Alleva, G., 2003. How to evaluate metacognitive functioning in psychotherapy? The metacognition assessment scale and its applications. Clin. Psychol. Psychother. 10 (4), 238–261. http://dx.doi.org/10.1002/cpp.362.

Shields, M.A., Ward, M., 2001. Improving nurse retention in the National Health Service in England: the impact of job satisfaction on intentions to quit. J. Health Econ. 20 (5), 677–701 (Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11558644).

Silverstein, S.M., Bellack, A.S., 2008. A scientific agenda for the concept of recovery as it applies to schizophrenia. Clin. Psychol. Rev. 28 (7), 1108–1124. http://dx.doi.org/10.1016/j.cpr.2008.03.004.

Spitzer, R., Williams, J., Gibbon, M., First, M., 1994. Structured Clinical Interview for DSM-IV. Biometrics Research, New York.

Tas, C., Brown, E.C., Esen-Danaci, A., Lysaker, P.H., Brüne, M., 2012. Intrinsic motivation and metacognition as predictors of learning potential in patients with remitted schizophrenia. J. Psychiatr. Res. 46 (8), 1086–1092. http://dx.doi.org/10.1016/j.jpsychires.2012.04.027.

Twamley, E.W., Jeste, D.V., Lehman, A.F., 2003. Vocational rehabilitation in schizophrenia and other psychotic disorders: a literature review and meta-analysis of randomized controlled trials. J. Nerv. Ment. Dis. 191 (8), 515–523. http://dx.doi.org/10.1097/01.nmd.0000082213.42509.69.

Van Donkersgoed, R.J., De Jong, S., Van der Gaag, M., Aleman, A., Lysaker, P.H., Wunderink, L., Pijnenborg, G., 2014. A manual-based individual therapy to improve metacognition in schizophrenia: protocol of a multi-center RCT. BMC Psychiatry 14 (1), 27. http://dx.doi.org/10.1186/1471-244X-14-27.

Vohs, J.L., Lysaker, P.H., Nabors, L., 2013. Associations of personality with intrinsic motivation in schizophrenia. Psychiatry Res. 208 (1), 78–80. http://dx.doi.org/10.1016/j.psychres.2013.03.008.

Yanos, P.T., Lysaker, P.H., Roe, D., 2010. Internalized stigma as a barrier to improvement in vocational functioning among people with schizophrenia-spectrum disorders. Psychiatry Res. 178 (1), 211–213. http://dx.doi.org/10.1016/j.psychres.2010.01.003.